

## **RAW SEQUENCE LISTING**

**The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.**

Application Serial Number: 10/051,909A

Source: /FW/6

Date Processed by STIC: 7/20/05

# ***ENTERED***



IFW16

## RAW SEQUENCE LISTING

DATE: 07/20/2005

PATENT APPLICATION: US/10/051,909A

TIME: 11:22:53

Input Set : A:\10051909 Sequence Listing.txt

Output Set: N:\CRF4\07202005\J051909A.raw

3 <110> APPLICANT: Helentjaris, Tim  
 5 <120> TITLE OF INVENTION: Plant Sugar Transport Proteins  
 7 <130> FILE REFERENCE: 2119-4263 (BB1163 US CIP)  
 9 <140> CURRENT APPLICATION NUMBER: 10/051,909A  
 10 <141> CURRENT FILING DATE: 2002-01-17  
 12 <160> NUMBER OF SEQ ID NOS: 56  
 14 <170> SOFTWARE: Microsoft Office 97  
 16 <210> SEQ ID NO: 1  
 17 <211> LENGTH: 2824  
 18 <212> TYPE: DNA  
 19 <213> ORGANISM: Zea mays  
 21 <220> FEATURE:  
 22 <221> NAME/KEY: unsure  
 23 <222> LOCATION: (29)  
 24 <223> OTHER INFORMATION: n = a, c, g or t  
 26 <220> FEATURE:  
 27 <221> NAME/KEY: unsure  
 28 <222> LOCATION: (622)  
 29 <223> OTHER INFORMATION: n = a, c, g or t  
 31 <220> FEATURE:  
 32 <221> NAME/KEY: unsure  
 33 <222> LOCATION: (636)  
 34 <223> OTHER INFORMATION: n = a, c, g or t  
 36 <220> FEATURE:  
 37 <221> NAME/KEY: unsure  
 38 <222> LOCATION: (638)  
 39 <223> OTHER INFORMATION: n = a, c, g or t  
 41 <220> FEATURE:  
 42 <221> NAME/KEY: unsure  
 43 <222> LOCATION: (669)  
 44 <223> OTHER INFORMATION: n = a, c, g or t  
 46 <220> FEATURE:  
 47 <221> NAME/KEY: unsure  
 48 <222> LOCATION: (771)  
 49 <223> OTHER INFORMATION: n = a, c, g or t  
 51 <220> FEATURE:  
 52 <221> NAME/KEY: unsure  
 53 <222> LOCATION: (822)  
 54 <223> OTHER INFORMATION: n = a, c, g or t  
 56 <220> FEATURE:  
 57 <221> NAME/KEY: unsure  
 58 <222> LOCATION: (856)  
 59 <223> OTHER INFORMATION: n = a, c, g or t

p.6

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61 &lt;220&gt; FEATURE:

62 &lt;221&gt; NAME/KEY: unsure

63 &lt;222&gt; LOCATION: (889)

64 &lt;223&gt; OTHER INFORMATION: n = a, c, g or t

66 &lt;220&gt; FEATURE:

67 &lt;221&gt; NAME/KEY: unsure

68 &lt;222&gt; LOCATION: (896)

69 &lt;223&gt; OTHER INFORMATION: n = a, c, g or t

71 &lt;220&gt; FEATURE:

72 &lt;221&gt; NAME/KEY: unsure

73 &lt;222&gt; LOCATION: (944)

74 &lt;223&gt; OTHER INFORMATION: n = a, c, g or t

76 &lt;400&gt; SEQUENCE: 1

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W--> 77 cccaccccc tccactccac taccacggng gcacggcctg cctctgcagc tctgccctgc 60
78 tccgcacccc tcgctctcca accccaacgc gcggcggtgc taaaattcac ctcagcgcgt 120
79 actccagttt ggccacctca ccacccgccg ccgctgttta agaaggcccc gcgcccgatc 180
80 ggggatcacg aaccttgccc gccgctgccg gagtgggggc gtagatttcc ggcgcccatg 240
81 gggggcgccg tgatggctgc catcgcgccc tctatcggca acttgctgca gggctgggac 300
82 aatgcgacaa ttgctggagc cgtcctgtac ataaagaagg aattcaacct gcagagcgag 360
83 cctctgatcg aaggcctcat cgtcgccatg ttcctcattg gggcaacagt catcacaaca 420
84 tctccggggc caagggtga ctgcgttggt aggaggccca tgctggctgc ctcggctgtc 480
85 ctctacttcg tcagtgggct ggtgatgctt tgggcgcaa ttgtgtacat cttgctcctc 540
86 gcaaggctca ttgatgggtt cggatcggt ttggcggtca cacttggtcc tctctacatc 600
87 tccgaaactg caccgcacag anattcttgg ggctgntnga acacgttgcc gcagttcatt 660
88 ggggtcagng gagggatgtt cctctcctac tgcattggtt ttgggatgtc cctcatgccc 720
89 aaacctgatt ggaggctcat gcttgagatt ctgctgatcc cgtcacttat ntactttgga 780
90 ctgactgtct tctacttgcc tgaatcacca aggtggcttg tnagcaaagg aaggatggcg 840
91 gaggcgaaga gagtntgca aaggctgcgg ggaagagaag atgtctcang ggaganggct 900
92 cttctagttg aaggtttggg ggtcggtaaa gatacacgta ttnagagta catcattgga 960
93 cctgccaccg aggcagccga tgatcttgta actgacggtg ataaggaaca aatcacactt 1020
94 tatgggcctg aagaaggcca gtcattgatt gctcgacctt ctaagggacc catcatgctt 1080
95 ggaagtgtgc tttctcttgc atctcgtcat gggagcatgg tgaaccagag tgtaccctt 1140
96 atggatccga ttgtgacact ttttggtagt gtccatgaga atatgcctca agctggagga 1200
97 agtatgagga gcacattgtt tccaaacttt ggaagtatgt tcagtgtcac agatcagcat 1260
98 gccaaaaatg agcagtggga tgaagagaat cttcataggg atgacgagga gtacgcatct 1320
99 gatggtgcag gaggtgacta tgaggacaat ctccatagcc cattgctgtc caggcaggca 1380
100 acaggtgcgg aagggaagga cattgtgcac catggtcacc gtggaagtgc tttgagcatg 1440
101 agaaggcaaa gcctcttagg ggagggtgga gatggtgtga gcagcactga tatcggtggg 1500
102 ggatggcagc ttgcttgga atggtcagag aagggaaggt agaattgtag aaaggaaggt 1560
103 ggtttcaaaa gagtctactt gcaccaagag ggagttcctg gctcaagaag gggctcaatt 1620
104 gtttcacttc ccggtggtgg cgatgttctt gagggtagtg agtttgtaca tgctgctgct 1680
105 ttagtaagtc agtcagcact tttctcaaag ggtcttgctg aaccacgcat gtcagatgct 1740
106 gccatgggtc acccatctga ggtagctgcc aaagggtcac gttggaaaga tttgtttgaa 1800
107 cctggagtga ggcggtgccct gttagtcggt gttggaattc agatccttca acagtttgct 1860
108 ggaataaacg gtgttctgta ctatacccca caaattcttg agcaagctgg tgtggcagtt 1920
109 attctttcca aatttggtct cagctcggca tcagcatcca tcttgatcag ttctctcact 1980
110 accttactaa tgcttccttg cattggcttt gccatgctgc ttatggatct ttccggaaga 2040
111 aggtttttgc tgctaggcac aattccaatc ttgatagcat ctctagttat cctggttgtg 2100
112 tccaatctaa ttgatttggg tacactagcc catgctttgc tctccaccat cagtgttatc 2160

```

## RAW SEQUENCE LISTING

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Input Set : A:\10051909 Sequence Listing.txt

Output Set: N:\CRF4\07202005\J051909A.raw

```

113 gtctacttct gctgcttcgt tatgggattt ggtcccatcc ccaacatttt atgtgcagag 2220
114 atctttccaa ccagggttcg tggcctctgt attgccattt gtgcctttac attctggatc 2280
115 ggagatatca tcgtcaccta cagccttcct gtgatgctga atgctattgg actggcgggt 2340
116 gttttcagca tatatgcagt cgtatgcttg atttcctttg tgttcgtctt ccttaagggtc 2400
117 cctgagacaa aggggatgcc ccttgagggtt attaccgaat tctttgcagt tgggtgcgaag 2460
118 caagcggctg caaaagccta atttcctttg tacctttgtg tgcaactatt gcactgtaag 2520
119 ttagaaactt gaaggggttt caccaagaag ctcgagagaat tactttggat ttgtgtaaag 2580
120 gttaagggaa cgaacatctg ctcatgctcc tcaaacggta aaaaagagtc cctcaatggc 2640
121 aaataggagt cgttaagttg tcaatgtcat ttaccatatg ttttacctat ttgtactgta 2700
122 ttataagtca agctattcaa cgctgggttg tgctagaaat ctttagaaca aagatgataa 2760
123 tgatctgacg tgatgttata atattcaaat ctcaaataaa gaaaatatcg tttctcaaaa 2820
124 aaaa 2824

```

```

126 <210> SEQ ID NO: 2
127 <211> LENGTH: 747
128 <212> TYPE: PRT
129 <213> ORGANISM: Zea mays
131 <220> FEATURE:
132 <221> NAME/KEY: UNSURE
133 <222> LOCATION: (129)
134 <223> OTHER INFORMATION: Xaa = any amino acid
136 <220> FEATURE:
137 <221> NAME/KEY: UNSURE
138 <222> LOCATION: (133)..(134)
139 <223> OTHER INFORMATION: Xaa = any amino acid
141 <220> FEATURE:
142 <221> NAME/KEY: UNSURE
143 <222> LOCATION: (144)
144 <223> OTHER INFORMATION: Xaa = any amino acid
146 <220> FEATURE:
147 <221> NAME/KEY: UNSURE
148 <222> LOCATION: (178)
149 <223> OTHER INFORMATION: Xaa = any amino acid
151 <220> FEATURE:
152 <221> NAME/KEY: UNSURE
153 <222> LOCATION: (207)
154 <223> OTHER INFORMATION: Xaa = any amino acid
156 <220> FEATURE:
157 <221> NAME/KEY: UNSURE
158 <222> LOCATION: (218)
159 <223> OTHER INFORMATION: Xaa = any amino acid
161 <220> FEATURE:
162 <221> NAME/KEY: UNSURE
163 <222> LOCATION: (220)
164 <223> OTHER INFORMATION: Xaa = any amino acid
166 <220> FEATURE:
167 <221> NAME/KEY: UNSURE
168 <222> LOCATION: (236)
169 <223> OTHER INFORMATION: Xaa = any amino acid
171 <400> SEQUENCE: 2

```

## RAW SEQUENCE LISTING

DATE: 07/20/2005

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Input Set : A:\10051909 Sequence Listing.txt

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```

172 Met Gly Gly Ala Val Met Val Ala Ile Ala Ala Ser Ile Gly Asn Leu
173   1           5           10           15
175 Leu Gln Gly Trp Asp Asn Ala Thr Ile Ala Gly Ala Val Leu Tyr Ile
176           20           25           30
178 Lys Lys Glu Phe Asn Leu Gln Ser Glu Pro Leu Ile Glu Gly Leu Ile
179           35           40           45
181 Val Ala Met Phe Leu Ile Gly Ala Thr Val Ile Thr Thr Ser Pro Gly
182           50           55           60
184 Pro Arg Ala Asp Cys Val Gly Arg Arg Pro Met Leu Val Ala Ser Ala
185  65           70           75           80
187 Val Leu Tyr Phe Val Ser Gly Leu Val Met Leu Trp Ala Pro Ile Val
188           85           90           95
190 Tyr Ile Leu Leu Leu Ala Arg Leu Ile Asp Gly Phe Gly Ile Gly Leu
191           100          105          110
193 Ala Val Thr Leu Val Pro Leu Tyr Ile Ser Glu Thr Ala Pro His Arg
194           115          120          125
W--> 196 Xaa Ser Trp Gly Xaa Xaa Asn Thr Leu Pro Gln Phe Ile Gly Val Xaa
197           130          135          140
199 Gly Gly Met Phe Leu Ser Tyr Cys Met Val Phe Gly Met Ser Leu Met
200 145           150          155          160
202 Pro Lys Pro Asp Trp Arg Leu Met Leu Gly Val Leu Ser Ile Pro Ser
203           165          170          175
205 Leu Xaa Tyr Phe Gly Leu Thr Val Phe Tyr Leu Pro Glu Ser Pro Arg
206           180          185          190
208 Trp Leu Val Ser Lys Gly Arg Met Ala Glu Ala Lys Arg Val Xaa Gln
209           195          200          205
211 Arg Leu Arg Gly Arg Glu Asp Val Ser Xaa Glu Xaa Ala Leu Leu Val
212           210          215          220
214 Glu Gly Leu Gly Val Gly Lys Asp Thr Arg Ile Xaa Glu Tyr Ile Ile
215 225           230          235          240
217 Gly Pro Ala Thr Glu Ala Ala Asp Asp Leu Val Thr Asp Gly Asp Lys
218           245          250          255
220 Glu Gln Ile Thr Leu Tyr Gly Pro Glu Glu Gly Gln Ser Trp Ile Ala
221           260          265          270
223 Arg Pro Ser Lys Gly Pro Ile Met Leu Gly Ser Val Leu Ser Leu Ala
224           275          280          285
226 Ser Arg His Gly Ser Met Val Asn Gln Ser Val Pro Leu Met Asp Pro
227           290          295          300
229 Ile Val Thr Leu Phe Gly Ser Val His Glu Asn Met Pro Gln Ala Gly
230 305           310          315          320
232 Gly Ser Met Arg Ser Thr Leu Phe Pro Asn Phe Gly Ser Met Phe Ser
233           325          330          335
235 Val Thr Asp Gln His Ala Lys Asn Glu Gln Trp Asp Glu Glu Asn Leu
236           340          345          350
238 His Arg Asp Asp Glu Glu Tyr Ala Ser Asp Gly Ala Gly Gly Asp Tyr
239           355          360          365
241 Glu Asp Asn Leu His Ser Pro Leu Leu Ser Arg Gln Ala Thr Gly Ala
242           370          375          380
244 Glu Gly Lys Asp Ile Val His His Gly His Arg Gly Ser Ala Leu Ser

```

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```

245 385          390          395          400
247 Met Arg Arg Gln Ser Leu Leu Gly Glu Gly Gly Asp Gly Val Ser Ser
248          405          410          415
250 Thr Asp Ile Gly Gly Gly Trp Gln Leu Ala Trp Lys Trp Ser Glu Lys
251          420          425          430
253 Glu Gly Glu Asn Gly Arg Lys Glu Gly Gly Phe Lys Arg Val Tyr Leu
254          435          440          445
256 His Gln Glu Gly Val Pro Gly Ser Arg Arg Gly Ser Ile Val Ser Leu
257          450          455          460
259 Pro Gly Gly Gly Asp Val Leu Glu Gly Ser Glu Phe Val His Ala Ala
260 465          470          475          480
262 Ala Leu Val Ser Gln Ser Ala Leu Phe Ser Lys Gly Leu Ala Glu Pro
263          485          490          495
265 Arg Met Ser Asp Ala Ala Met Val His Pro Ser Glu Val Ala Ala Lys
266          500          505          510
268 Gly Ser Arg Trp Lys Asp Leu Phe Glu Pro Gly Val Arg Arg Ala Leu
269          515          520          525
271 Leu Val Gly Val Gly Ile Gln Ile Leu Gln Gln Phe Ala Gly Ile Asn
272          530          535          540
274 Gly Val Leu Tyr Tyr Thr Pro Gln Ile Leu Glu Gln Ala Gly Val Ala
275 545          550          555          560
277 Val Ile Leu Ser Lys Phe Gly Leu Ser Ser Ala Ser Ala Ser Ile Leu
278          565          570          575
280 Ile Ser Ser Leu Thr Thr Leu Leu Met Leu Pro Cys Ile Gly Phe Ala
281          580          585          590
283 Met Leu Leu Met Asp Leu Ser Gly Arg Arg Phe Leu Leu Leu Gly Thr
284          595          600          605
286 Ile Pro Ile Leu Ile Ala Ser Leu Val Ile Leu Val Val Ser Asn Leu
287          610          615          620
289 Ile Asp Leu Gly Thr Leu Ala His Ala Leu Leu Ser Thr Ile Ser Val
290 625          630          635          640
292 Ile Val Tyr Phe Cys Cys Phe Val Met Gly Phe Gly Pro Ile Pro Asn
293          645          650          655
295 Ile Leu Cys Ala Glu Ile Phe Pro Thr Arg Val Arg Gly Leu Cys Ile
296          660          665          670
298 Ala Ile Cys Ala Phe Thr Phe Trp Ile Gly Asp Ile Ile Val Thr Tyr
299          675          680          685
301 Ser Leu Pro Val Met Leu Asn Ala Ile Gly Leu Ala Gly Val Phe Ser
302          690          695          700
304 Ile Tyr Ala Val Val Cys Leu Ile Ser Phe Val Phe Val Phe Leu Lys
305 705          710          715          720
307 Val Pro Glu Thr Lys Gly Met Pro Leu Glu Val Ile Thr Glu Phe Phe
308          725          730          735
310 Ala Val Gly Ala Lys Gln Ala Ala Ala Lys Ala
311          740          745
313 <210> SEQ ID NO: 3
314 <211> LENGTH: 443
315 <212> TYPE: DNA
316 <213> ORGANISM: Oryza sativa

```



**RAW SEQUENCE LISTING ERROR SUMMARY**  
**PATENT APPLICATION: US/10/051,909A**

DATE: 07/20/2005  
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Input Set : A:\10051909 Sequence Listing.txt  
 Output Set: N:\CRF4\07202005\J051909A.raw

**Please Note:**

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; N Pos. 29,622,636,638,669,771,822,856,889,896,944  
 Seq#:2; Xaa Pos. 129,133,134,144,178,207,218,220,236  
 Seq#:3; N Pos. 193,388,435,439  
 Seq#:4; Xaa Pos. 65,130  
 Seq#:11; N Pos. 421,434,441,458,483,493,498  
 Seq#:17; N Pos. 149,271,304,334,357,476,599,602  
 Seq#:18; Xaa Pos. 34,85,98,112,151  
 Seq#:22; Xaa Pos. 102  
 Seq#:35; N Pos. 1584  
 Seq#:36; Xaa Pos. 528  
 Seq#:40; Xaa Pos. 4  
 Seq#:41; Xaa Pos. 5  
 Seq#:42; Xaa Pos. 3,4,5,7  
 Seq#:44; Xaa Pos. 3,5  
 Seq#:45; Xaa Pos. 5,8,14  
 Seq#:46; Xaa Pos. 7,9,10  
 Seq#:47; Xaa Pos. 6  
 Seq#:48; Xaa Pos. 10  
 Seq#:50; Xaa Pos. 3,10  
 Seq#:51; Xaa Pos. 6,10  
 Seq#:52; Xaa Pos. 7  
 Seq#:53; Xaa Pos. 5,20  
 Seq#:54; Xaa Pos. 4,9,13,17  
 Seq#:55; Xaa Pos. 4,12,18,24  
 Seq#:56; Xaa Pos. 14

**Invalid <213> Response:**

Use of "Artificial" only as "<213> Organism" response is incomplete, per 1.823(b) of New Sequence Rules. Valid response is Artificial Sequence.

Seq#:39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56

## VERIFICATION SUMMARY

DATE: 07/20/2005

PATENT APPLICATION: US/10/051,909A

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Input Set : A:\10051909 Sequence Listing.txt

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L:77 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:0  
M:341 Repeated in SeqNo=1  
L:196 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:128  
M:341 Repeated in SeqNo=2  
L:342 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:180  
M:341 Repeated in SeqNo=3  
L:376 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:64  
M:341 Repeated in SeqNo=4  
L:827 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:420  
M:341 Repeated in SeqNo=11  
L:1087 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17 after pos.:120  
M:341 Repeated in SeqNo=17  
L:1134 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18 after pos.:32  
M:341 Repeated in SeqNo=18  
L:1375 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22 after pos.:96  
L:2556 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35 after pos.:1560  
L:2672 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36 after pos.:512  
L:2964 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:40 after pos.:0  
L:2985 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:41 after pos.:0  
L:3011 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:42 after pos.:0  
L:3052 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:44 after pos.:0  
L:3082 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:45 after pos.:0  
L:3112 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:46 after pos.:0  
L:3137 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:47 after pos.:0  
L:3158 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:48 after pos.:0  
L:3199 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:50 after pos.:0  
L:3225 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:51 after pos.:0  
L:3246 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:52 after pos.:0  
L:3272 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:53 after pos.:0  
M:341 Repeated in SeqNo=53  
L:3312 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:54 after pos.:0  
M:341 Repeated in SeqNo=54  
L:3352 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:55 after pos.:0  
M:341 Repeated in SeqNo=55  
L:3381 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:56 after pos.:0